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A.A.D.M. MID-WINTER MEETING
Sunday, December 7th, 1947
Hotel Pennsylvania

PROGRAM:

12:30 P.M. Luncheon

1:30 P.M. Greetings from:

Sidney Sorrin, President, American Academy of Dental Medicine

J. L. T. Appleton, Dean, Thomas W. Evans Museum and Dental Institute School of Dentistry, University of Pennsylvania

Bion R. East, Associate Dean, Columbia University School of Dental and Oral Surgery

Russell W. Groh, Dean, University of Buffalo School of Dentistry

Gerald D. Timmons, Dean, Temple University School of Dentistry

Walter H. Wright, Dean, New York University College of Dentistry

2:15 P.M. Topic Discussions

Leader	*Topic*
Morton S. Biskind, M.D., New York	"Nutrition and Dentistry"
George Francis Clarke, D.D.S., Boston	"Relative Importance of Local Periodontal Treatment"
J. A. Englander, D.D.S., Jersey City	"Causes of Failure in Pulp Therapy"
Leslie J. Fitzsimmons, D.D.S., East Orange	"Local and Systemic Implications of Periodontal Disease"
Irving Glickman, D.M.D., Boston	"Hypertrophic Gingivitis, Its Diagnosis and Treatment"
Henry M. Goldman, D.M.D., Boston	"Alveolar Bone in Health and Disease; Possibilities of Reattachment"
F. Philip Lowenfish, M.D., New York	"Lesions of the Oral Mucous Membrane; Medical and Dental Responsibility"
Hayes Martin, M.D., New York	"Mouth Cancer"
John Oppie McCall, D.D.S., New York	"The Place of Focal Infection in the Syndrome of Chronic Illness"
Samuel Turkenkopf, D.D.S., Newark	"The Mechanism of Periapical Lesions and Their Therapy"

3:15 P.M. Reports by Group Leaders to the General Assembly

4:30 P.M.-5 P.M. General Discussion from the Floor, Questions and Answers

DR. LOUIS R. BURMAN
DR. HARRY ROTH
DR. SAMUEL CHARLES MILLER, *Chairman.*

PRESIDENT'S MESSAGE

SIDNEY SORRIN, D.D.S., *New York, N. Y.*

It is with a deep feeling of responsibility that I accept the high honor which you have bestowed upon me. The members of the Academy can look back over the first year of our existence with a feeling of pride and accomplishment. The excellent regime of my predecessor, Dr. Samuel Charles Miller, will always be remembered as one of organization and fulfillment beyond our greatest expectations. I shall endeavor to carry on the work which he so capably planned to make this Academy an outstanding society. Accomplishment of these objectives will be difficult and will require the cooperation of every member of the organization.

Plans for the ensuing year include concentration on the following program:—

1) Establishment of sectional groups. It is hoped by the next annual meeting that at least ten sections will have been established. Through these sections, our activities can be multiplied and our journal improved. This committee has already been appointed.
2) Decentralization of officers and committee members. It is our desire to develop leadership in our organization from among our membership throughout the world.
3) New features in the journal which will enhance its value to the readers.
4) The creation of a journal endowment fund.
5) Greater concentration on the dento-medical relationship.
6) Appointment of a program committee.
7) Appointment of a committee for the establishment of awards for undergraduate efficiency in dental medicine.
8) The holding of special meetings in connection with Chicago Mid-Winter Clinic, Greater New York Meeting and American Dental Association Meeting in addition to the regular meeting in June.

I do hope that with the cooperation of the members and the various committees that most of the aforementioned recommendations will be carried out this year. It is an ambitious program, but I am certain that with the help of our select membership we can look forward with the keenest anticipation towards the accomplishment of these objectives.

745 Fifth Avenue

OBJECTIVES OF THE AMERICAN ACADEMY OF DENTAL MEDICINE

(*Quoted from the Constitution*)

"To promote the study and dissemination of knowledge of the cause, prevention and control of diseases of the teeth, their supporting structures and adnexa and related subjects; and to foster and promote a better scientific understanding between the fields of dentistry and medicine."

A STUDY OF DERMOID TUMORS CONTAINING TEETH

LOUIS B. AMYOT, D.D.S., M.S.D., *Schenectady, N. Y.*

Review of the Literature

Much information is available on the subject of dermoid tumors of the ovary containing teeth in so far as it relates to the soft tissues found in these growths; on the other hand, the researches on the dental structures of teratomas have been comparatively rare, the work of Broomel being about the only study published in English found to date.

However, the foreign literature contains some excellent material on the subject under consideration, notably the work of Sannai and Kanamori of Tokio, Japan. Researches by these investigators have brought to light many revelations on this problem which, until the past few years had been obscure.

The two studies by the Japanese workers Sannai and Kanamori cover the whole field and are therefore the only ones selected for review. The former examined 34 ovarian cysts, 32.6% of which contained teeth of which 13 were erupted into the cyst space. These teeth were classified as premolars, incisors, tooth germs and tooth fragments and their incidence was in the order as listed above. He asserts that there is a succession of teeth and recognizes teeth both of the temporary and permanent set. He notes that nerves are either completely lacking or very scanty in the pulps of these teeth, and that the pulps have a very scanty blood supply. The former finding is explained upon the basis of the general lack of nerve tissues in tumors of the teratoma and dermoid type. The pulps are frequently the site of reticular fibrous atrophy. Dentine formation is regular and symmetrical in the outermost layers, but the dentine becomes increasingly irregular and poorly formed as the pulp is approached, due no doubt to the poor blood supply and the progressive atrophy of the pulp. Lacunar resorption of cementum, dentine and even enamel is a common occurrence with replacement of the hard tissues by connective tissue, osteoid substance or both. This phenomena is more common in the erupted teeth and less common in those that are completely buried. The cementum of these teeth is poorly developed with both aplasia and hypoplasia. Resorption, he believes, is due to chronic inflammatory conditions in the cyst walls or to deficiency of lime salts; he says nothing about the possibility of pressure due to crowding together of teeth. He observes nothing resembling dental caries, and mentions this specifically, adding that all changes of a destructive character in the crown are to be classed very definitely as resorption. About retained and erupted teeth, there are hyperplasias of enamel organ epithelium resembling the structure of adamantinoma.

Kanamori examined 50 ovarian cysts, of which only 8 contained teeth (16%), in all, 34 teeth were disclosed in these 8 tumors of which 18 were erupted or partly erupted and 16 entirely enclosed in the cyst wall. No teeth were found to be free in the cyst cavity. The form of these was not very discernible as to tooth groups but mostly resembled molars, next in order premolars; incisors and cuspids were rare. There was a high percentage of malformed teeth (21%) and those in the developing stages numbered 11. There is no evidence of teeth in the earliest stages of development.

Resorption he found common (62%), and this involved all portions of the teeth. He stresses the fact that in all 6 teeth completely buried, resorption is known to take place in older ones in preference to less mature teeth. Calcification was deficient, although in 9 of the teeth, decalcification of enamel was complete in the fluid used for technical purposes, indicating a high grade of calcification of the enamel of these teeth. The peridental membrane is of the nonfunctioning type common to teeth found in cysts. No normal pulps were found

and evidence of fibrous atrophy (reticular) was discerned. In most cases, ovarian dermoid teeth were associated with bone in the form of a shell of cortical bone around the teeth. In 20 cases, the root was entirely surrounded by bone. Enamel of dermoid teeth presented with whorls of thread like structures and canal like streaks which were seen mostly in the occlusal surfaces, signifying the possibility of nutritive canals. No mention is made of caries, so it may be assumed that these were not present.

Character of Material

In view of the fact that an exhaustive study of all the tissues of the cysts under consideration would require unlimited time, it was deemed necessary to limit the research to the study of the dental structures.

The object of this investigation is an analysis of the dental tissues and a comparison to the normal, as well as a correlation of the findings with those of similar studies by investigators prominent in the field of dental histology.

For microscopic study, sections were made only from the second tumor described and those confined to the region known to contain teeth.

The specimens were first decalcified in 5% nitric acid; after washing in water for 73 hours, dehydration followed in alcohol of increasing strength up to absolute alcohol. Next, the specimen were imbedded in celloidin in the usual manner used for infiltrating specimens containing teeth and bone. Sections were then made and stained with hemetoxylin and eosin and finally mounted for microscopic study.

Although an effort was made to section the teeth in two planes, one parallel to the long axis of the tooth and the other at right angles to it, the results were only partially successful.

DESCRIPTION OF CYSTS:

Dermoid cyst of the Ovary No. 1.

Macroscopic Examination

This contains one tooth resembling a bicuspid. The crown is well formed and completely covered with enamel, no evidence of caries being present. The crown is free from the cyst wall, but the apical third shows some tissue connecting the root of the tooth to the wall of the cyst cavity. The root is so well covered with soft tissues that a detailed description of it cannot be made without some dissection.

At a distance of about one inch from the tooth on a more or less papillated surface is found some hair varying from one quarter to one inch in length.

Radiographic Examination

Radiographic examination reveals a perfectly formed single rooted bicuspid tooth with well defined enamel, dentine and cementum and a pulp chamber very definitely outlined. Scattered about the tooth are seen three areas presumably calcified, about the size of the head of a pin.

Dermoid cyst of the Ovary No. 2.

Macroscopic Examination

The cyst is 5cm. in diameter, the walls varying from 1 mm. to 1 cm. in thickness. The outer covering is fairly smooth and glistening in appearance. An incision was made dividing the cyst into equal parts. The internal surface is more or less irregular, papillated and yellow. It is coated with a cheese-like material, thru which project hair-like fibres.

Closer examination discloses solid bodies covered with enamel projecting thru the cyst wall. These are three in number but their classification cannot be determined due to their being but partially exposed to view.

On either side, but away from these hard polished surfaces, are two depressions about a half centimeter in depth in which is present the cheese-like material described above. These two cavities converge toward each other to a point culminating in a round elevation not unlike a wart, situated in the center of the cyst. With a pin pointed instrument, downward and lateral pressure being applied gives a rubber-like consistency to the material.

Radiographic Examination

The radiograph shows a dark mass with areas more or less wavy, in the center of which are seen translucent areas and also radiopaque structures recognized as teeth. These are five in number not including four areas of condensation which resemble in a dental radiograph a molar and two bicuspids approximating one another in a vertical manner, while the other two look fused together and almost at right angles to the teeth first described. The teeth in question are well developed.

The two remaining teeth resemble, one a deciduous bicuspid the root of which is not visible, while the other is a fairly well developed cuspid. The remaining areas of density are irregular in outline and no clues as to their identity as dental organs are present.

Ovarian cyst No. 3.

Macroscopic Examination

The cyst is three cm. in diameter, has a smooth glistening appearance, grayish white in color. Internal aspect of the cyst wall presents many (multilocular) irregularly shaped cavities, varying from one-half cm. to two cm. in width and from one-quarter to one cm. in thickness. The texture is smooth though a yellow, soft, cheesy material is present in masses in different parts of the cyst. The inner cyst wall is free from hair. On one side of the cyst wall are seen two well-formed teeth resembling a bicuspid and a molar. The roots of these are barely visible not permitting of a close examination. There are no visible roots of the bicuspid.

Radiographic Examination

The radiograph of the cyst reveals a cloudy mass showing many cavities different in size. Wave-like projections are present. The teeth are well outlined and present a well-formed molar which appears single rooted and likely superimposed obliquely upon the bicuspid, which looks attached to the molar. Areas resembling dental decay in a dental radiograph are seen along one side of the bicuspid extending mid-way from the crown down to the middle half of the bicuspid.

MICROSCOPY OF CYST NO. 2

Crown Portion

This part of the tooth is covered by enamel; due to decalcification in preparing the specimen for study, most of the enamel is missing. Enough is present to justify the statement that it does not appear to differ materially from enamel of normal teeth prepared in the same way. A peculiarity is the presence of an enamel lamella. This structure is seen as a band with loose folds extending from the outer surface and projecting downward to the proximity of the bottom of the crevice of

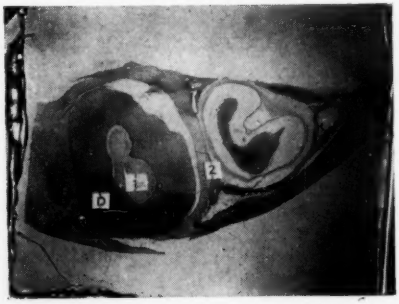

Fig. 1. Cross section of teeth in ovarian cyst. 1. pulp chamber; D. dentine; 2. bone.

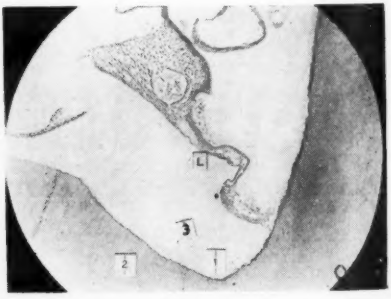

Fig. 2. Illustration of enamel lamella. L. lamella; 1. enamel; 2. dentine; 3. crevice in enamel.

the enamel at the cementoenamel junction. It resembles enamel organ epithelium and can be explained by the uneven development of the enamel.

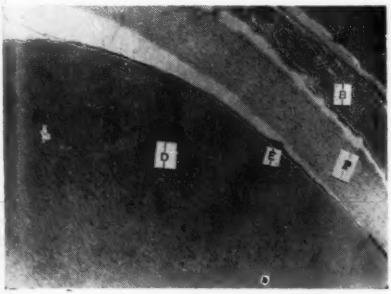

Fig. 3. E. epithelial attachment showing thickening; D. dentine; P. peridental membrane; B. bone.

Epithelial Attachment and Enamel Membrane

The epithelial attachment is very much in evidence and may be described as a long, narrow strip composed of stratified, epithelial cells which, under high power are arranged in rows, two to four in number. This structure is well developed and follows along the enamel to end just short of, but not beyond, the cementoenamel junction, from which it seems to extend into the line of the epithelial cords. Here the cells are paler, irregular and fewer in number. The position of the epithelial attachment at the cementoenamel junction is significant of the first stage of tooth eruption, in this case. Though there is an absence of oral epithelium, one is impressed with the merging of the epithelial attachment with the inner lining of the cyst wall. The attachment is separated from the structures and is only found definitely attached to the cemento-enamel junction as previously described.

Dentine

The dentine appears homogeneous, well defined and calcified. It is composed of fine, dark lines radiating from the

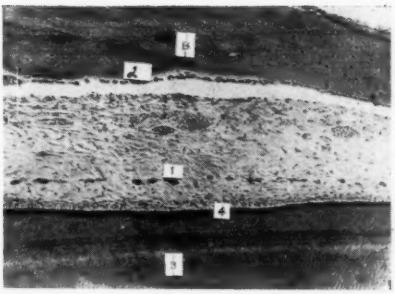

Fig. 4. Showing epithelial cords. 1. epithelial cords; B. bone; 2. osteoblasts; 3. dentine; 4. lamella in the cementum.

border of the pulp to the cementum and enamel. The dentinal tubules are arranged in an orderly manner and show evidence of calcification with the characteristics peculiar to this structure when normal dentine is examined. The relation of the tubules in the external surface of the dentine varies on the crown and root. In the former, crescentic depressions are formed, filled by enamel and in which the tubules appear to terminate.

On the root, the opposite condition exists; the tubules stop in curved ends beneath the cementum by which they seem to be covered. As we follow the dentine to the pulp, our attention is called to round, globular areas extending from the surface; these are globules of calcified dentine and are found throughout the inner periphery of the dentine. Incomplete areas of calcified dentine, as well as irregularly calcified regions, signify arrested or interrupted calcification or incompletely calcified dentine. Interglobular spaces are present, and predentine stands out very clearly as a light area between the dentine and the pulp. In general, the dentine compares favorably with that found in microscopic sections of normal teeth.

Cementum

It begins where the enamel thins away and is very thin, well defined and formed around the circumference of the tooth. It is seen as a thin border overlying the

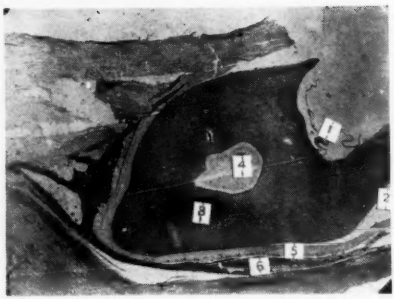

Fig. 5. Section of tooth in ovary. 1. enamel lamella; 2. epithelial attachment; 3. dentine; 4. pulp; 5. peridental membrane; 6. lamina dura.

dentine. There is a very intimate union between the outer surface of the very thin layer of cementum and pericementum. The fibres of the latter penetrate the cementum at all points of the periphery; in fact the peridental membrane fibres are imbedded in the substance of the cementum.

Under high power the lamellae of the cementum are very discernible with cementoblasts lying in the interstices of the lamellae. Osteoid tissue is absent, and there is no evidence of hypercementosis except in the case of one tooth, part of the root of which is absent due to resorption.

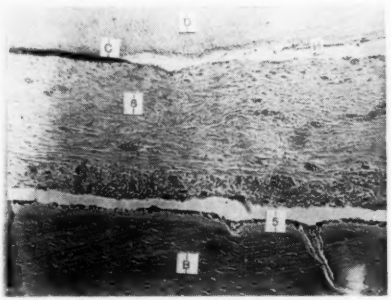

Fig. 6. Relation of peridental membrane to surrounding tissues. 8. Peridental membrane; C. cemento-enamel junction; D. dentine; B. bone; 5. osteoblasts; H. epithelial attachment.

Pulp

The pulp is recognized as a central cavity completely encircled by the dentine. At the zone near the dentine, encircling it, are seen the odontoblasts which appear as round, oval or stellate cells with processes. The more elongated cells are most regularly disposed around the blood vessels, which they seem to envelop in delicate, fibrous sheaths. There is an aspect of vascularity to the pulp due to the numerous blood vessels encountered, averaging 15 to 20 in number per section. The arteries of the pulp occasionally extend between the cells already described.

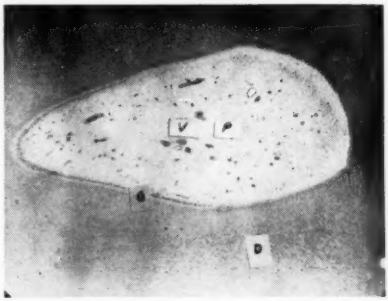

Fig. 7. Pulp of tooth. P. pulp chamber; V. blood vessel in pulp; O. odontoblasts at periphery of pulp; D. dentine.

In the peripheral zone of the pulp near the dentine, the odontoblasts are cylindrical in shape and in many rows; they send many delicate fibres into the inner border of the dentine and into the pulp itself. Close to this layer are found other cells less cylindrical and irregularly disposed. Now more fibrous tissue is perceptible as the center of the pulp is examined, and the cells are fewer in number. Finally, towards the center, the cells become smaller and round, closely packed and gradually merge with the tissue of the pulp itself.

A peculiarity is the absence of nerve bundles in the chamber of the pulp. Every effort was attempted to discover the possible presence of nerves only to meet

with failure. Such an anomaly should furnish us with a topic worthy of discussion.

Peridental Membrane

This structure is embryonic and delicate in character and is composed of white connective tissue found between the bone and cementum. The fibres are quite numerous, relaxed and run a course more or less parallel and oblique to the circumference of the tooth, very typical of a non-functioning peridental membrane. It is firmly attached to the cementum, but loosely to the bone. Fibroblasts are visible and situated between the cementum and the lamina dura which they cover and serve as periosteum. The peridental membrane loses its character near the apex and blood vessels penetrate it.

(See Fig. 3, Page 79)

Very outstanding are the epithelial cords. These are situated in the less dense tissue of the peridental membrane between the penetrating fibres and are closer to the periphery of the cementum than the outer border. The cords seem to be arranged in rows composed of irregular groups of epithelial cells resembling a network in the meshes of the connective tissue. They start at the cemento-enamel junction of one side and end at the cemento-enamel junction of the opposite side, finally disappearing in the substance of the membrane. The arrangement of the cells in the cord is not definite, but presents a circular band of more or less rounded cells, bearing a resemblance to the duct of a gland. As the epithelial cords wind their way into the gingivae, they lose their identity among the tissue fibres. These wind in and out of the fibres of the peridental membrane and join with each other, giving a reticulated appearance.

(See Fig. 4, Page 79)

The cells are not arranged in any definite order. In places the arrangement resembles that of a tubular gland, while elsewhere the outer layer of the cells is very definite while the central portion of cells is surrounded by the outer layer described: and again they seem to follow one another in single file. There is a line of demarcation formed by the lack of fibres from the peridental membrane to the lamina dura. This compares favorably with the situation found in a loose tooth.

Bone

The presence of bone in the immediate vicinity of the teeth reveals the bone which runs parallel to the peridental membrane, but does not completely surround the tooth.

(See Fig. 1, Page 78)

The lamina dura because of the loose connection with the fibres is totally independent of the peridental membrane; there is a distinct line of demarcation between the two structures. Periosteum is present; lacunae are numerous and marrow spaces are very visible.

(See Fig. 6, Page 80)

The presence on one side of osteoblasts shows evidence of bone building, and on the other side are giant cells attesting to the fact that bone resorption has taken place. This is very typical of drifting teeth.

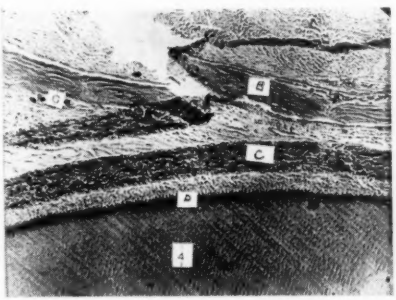

Fig. 8. Bone resorption. G. giant cells; B. bone; C. peridental membrane; 4. dentine; D. lamella of cementum.

Tooth Resorption

A tooth, presumably a deciduous one, presents with a thick, mature cementum. Close examination reveals osteoblasts at

work followed by connective tissue replacing the absorbed portion of the tooth.

This absorption has the same characteristics as that of a temporary tooth which, in turn, has a bearing on the theory of absorption of older teeth (Gottlieb - Orban). The older, denser, more solidly, calcified substance is absorbed first. The causative factor in resorption in this case has not been definitely established, though it is thought that the pressure from the surrounding teeth is responsible for this situation.

DISCUSSION AND SUMMARY

Three ovarian dermoid cysts were studied all of which were found to contain teeth. In all, 12 teeth were recognized of which 3 were fully erupted in the cyst space, 3 partially erupted and the remainder imbedded in the tissues of the cyst itself. No teeth were found free in the cyst cavity.

One tooth was classified as deciduous and the remainder as permanent, showing a succession of teeth. And although the form of the teeth is not always clear as to tooth group, molars and premolars predominate. One cuspid was identified and no incisors were found. As a rule, these teeth are well formed, and no teeth in the earlier stages of development were found.

Calcification generally is complete. Since the enamel almost entirely disappeared in the fluid used for technical decalcification, this is accepted as indicating a high grade of calcification in this structure. The outer layer of the dentine is symmetrical and apparently well calcified, although interglobular spaces are not uncommon; the inner layers next the pulp are only partly calcified. Cementum of these teeth is thin and poorly developed, aplasia and hypoplasia being constantly found. Resorption was found in one tooth only. The one classified as belonging to the deciduous dentition process is similar in all important respects to that of oral deciduous teeth with connective tissue replacement of the tooth root. The resorption is thought to be due in part to pressure adjacent to the tooth root. No caries was seen either by gross or microscopic examination suggesting a possible immunity of these teeth to decay in their abnormal environment.

The enamel organ, enamel organ remnants and enamel membranes were found quite constantly and in all respects resembled those of oral teeth even to the formation of enamel lamellae in the deep occlusal pits or fissures. Their relationships to epithelial cysts lining, enamel, cementum and the epithelial cords of the peridental membrane is characteristic also of those of oral teeth. The tooth pulps are generally like those of young teeth with only two important exceptions, the complete absence of nerve bundles and some vascular hypoplasia. The vessels are rather small, but numerous. The peridental membrane connective tissue is also hypoplastic, the fibres are scanty and generally arranged parallel or nearly parallel to the long axis of the tooth. These fibres are well imbedded at one end in the cementum, and very loosely, if at all, attached to the adjacent bone at the other end. In the peridental membrane the epithelial cords of Malassez are quite prominent and arranged in a single row closer to the tooth than to the bone.

Most of the roots of the teeth are surrounded or partly surrounded by bone. In some of this bone on one side of the tooth root, osteogenesis is at a high level, while on the opposite side bone resorption is taking place. This is interpreted as an evidence of tooth drifting in the cyst wall. Otherwise the bone is of the usual type of alveolar bone surrounding oral teeth.

All peculiarities of these ovarian cyst teeth have been noticed by the authors in the literature reviewed. Absence of nerve tissue or scarcity of nerve bundles in the pulp was mentioned by Sannai, but not by Kanamori, who failed to find a vascular condition in the pulp though Sannai admits an inadequate blood supply. Both Japanese investigators agree as to the similarities of formation of dentine and

to a high degree of calcification of enamel. Poorly developed cementum is in accordance with their deductions. Resorption, though present in one deciduous tooth studied, was also revealed by others and connective tissue replaced resorbed dentine. Sannai does not mention the peridental membrane, but Kanamori attests to the fact that this structure is of the non-functioning type. Bone in position more or less around the teeth was revealed in all researches. As to succession of teeth, we all agree, though Sannai differs on the frequency of type found, claiming the premolars to be of greater frequency than molars. Both men found incisors present. All are in agreement that no caries was in evidence, and no free teeth are observed in the cyst cavity.

This study failed to disclose the following conditions found by Sannai and Kanamori: reticular fibrous atrophy of the pulp, osteoid tissue replacement of resorbed dentine, inadequate blood supply of the pulp discerned by Sannai. Teeth in development stages were seen by Kanamori, who reports 11 such teeth; Sannai, however, found none. Heterotopic calcifications in the pulp discerned by Sannai, but not reported by Kanamori. The latter makes no mention of adamantinoma though Sannai suggests its possible presence. Resorption not so commonly found as noted by both Japanese writers. Malformed teeth, a high percentage of which was identified by Kannamori, but not reported by Sannai. No incisor teeth seen in the cyst, no tooth germs or tooth fragments were present.

In summarizing, it may be stated that the remarkable similarity between teeth found in ovarian cysts of the teratoma type and teeth in a similar position in the mouth is striking especially teeth that are fully formed, partly erupted and not in occlusion. The teeth in the cyst studied for the most part are well formed, symmetrically proportioned and embedded in connective tissue with the root portion surrounded by bone having the conventional arrangement of these tissues. As to classification, such teeth are more frequently of the molar and premolar type, showing a succession of teeth is an actuality in these anomalies of the ovary.

9 North Church St.

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DEAN WRIGHT HONORED

The American Academy of Dental Medicine at its first annual meeting in June, through its outgoing President, Dr. Samuel Charles Miller, awarded an Honorary Membership to Dr. Walter Henry Wright, Dean of the New York University College of Dentistry. In his speech of acceptance, Dr. Wright urged the cooperation of dentists and physicians for the betterment of health service to the patient.

The new officers of the Academy are. President, Sidney Sorrin; President-Elect, J. Lewis Blass; Secretary, William M. Greenhut; Treasurer, George Bruns; Editor, Allan N. Arvins.

Many interesting clinics were presented at the meeting followed by a business session. The Academy is planning a luncheon to be held at the Greater New York Meeting.

CHANGES IN MOUTH TISSUES AFTER VACCINATION

To the Editor:—A clinical observation which I believe has not been reported before is especially timely in view of the present drive for universal revaccination initiated by Commissioner Israel Weinstein of New York City.

I have had several cases for diagnosis of a painful itching or burning in discreet circumscribed areas in various parts of the mouth (tongue, lips, gingivae) which clinically show slight edema or desquamation. These lesions appear three to four days after vaccination against smallpox with varying intensity. No doubt the majority of the patients report no symptoms of this type, but for those who are affected the diagnosis may have puzzled some.

It is possible that other forms of immunization may produce temporary aberrations of the oral tissues which previously have not been thus associated.

SAMUEL CHARLES MILLER, D.D.S., New York.
Professor and Chairman of the Periodontia Department.
New York University College of Dentistry.

From the Journal of the American Medical Association; Vol. 134, No. 4, May 24, 1947, page 393.

THE PROFESSIONS IN ORGANIZATIONS.—Of the professions, the dentists lead in membership in all types of organizations except fraternal organizations. Dentists join organizations in general to a greater extent than do other groups; four-fifths belong to their own professional society, and three-quarters of them support the Chamber of Commerce. There is comparatively little difference in the activities of physicians and lawyers. Physicians belong to their professional organization to a greater extent than lawyers, but the latter find more advantage from membership in lodges than any other group. Clergymen seem to enter social activities to a small extent compared to other professions.—*Frederick A. Bushee, "Social Organizations in a Small City," Am. J. Sociology* 51:224 (*November*) 1945.

THE TEACHING OF OCCLUSION IN THE COURSE IN DENTISTRY*

SAMUEL CHARLES MILLER, D.D.S., F.A.C.D.†

INTRODUCTION

Not too long ago periodontal treatment was essentially a process of sanitation. Long before 1867, when John M. Riggs presented his heroic scaling procedures before the Connecticut Valley Dental Association, many types of instruments for the removal of deposits and for the maintenance of home care were already in use. Because of this historical concentration on scaling and maintenance of cleanliness, some might believe that the deposits of calculus on the teeth are an important etiological factor in the production of the disease. Even in the survey made for this paper, calculus ranked third in the order of importance of etiological factors in the opinion of those teaching this subject. However, on careful analysis it will be realized that calculus, mucinous plaques, materia alba and other deposits occur because of a departure from health rather than as a cause of the disease. In the opinion of these leaders, traumatic occlusion ranked first by a wide margin. (Fig. 1)

It was found that twenty-eight of thirty-two schools are now teaching equilibration of occlusion. (Fig 2) Of these, twenty-six have already developed the curriculum sufficiently so that students perform the operation. It was also found that teachers of Periodontia consider traumatic occlusion as the most important etiological factor in the production of periodontal disease, while infection is now relegated to eighth place. All other factors received few votes compared with traumatic occlusion.

Periodontal disease is primarily a dysfunctional disease. Its etiological agents are many, falling into the classes of dysfunctional, irritational and systemic factors with many combinations operating in every case. (Fig. 3) I do not remember a single case in which I would venture to state that traumatic occlusion was the only etiological factor; nor, for that matter, could there be a case with *any* single factor as the cause.

In treatment, we teach that uncovering of the etiological factors is of primary importance and removal of the causes is essential to treatment. This follows the old law of Wolff, that "when the injurious agent is removed, the tissues will automatically return to health." The law has its most successful demonstration in the cure of Periodontal Disease.

RELATIVE OPERATING TIME DEVOTED TO OCCLUSAL CORRECTION

At the New York University clinic, the following relative time was spent by students in the handling of Periodontia cases during the years 1938 to 1941, inclusive:

Charting, History Taking and Diagnosis	1 hour
Equilibration of Occlusion	2½ hours
Scaling and Portepolishing	1½ hours
Curetting	4 hours
Other Procedures (diet study, habits, brushing)	2 hours

The maximum operating time for any case was twelve hours.

EQUILIBRATION AND PERIODONTIC TREATMENT BEFORE OTHER DENTAL TREATMENTS

Equilibration of occlusion has become an exact science which can be taught to,

* Read before Section of Periodontia of the American Association of Dental Schools, Chicago, June 1947.

† Professor of Periodontia, Chairman of Periodontia Department; New York University College of Dentistry.

(Fig. 1)

OPINIONS ON ETIOLOGICAL FACTORS

(32 SCHOOLS)

Etiological Factor	Position 1	2	3	4	5	Weighted Rank
Traumatic Occlusion	7	8	3	3	2	82
Poor Hygiene	6	3	6	..	..	60
Calculus	8	2	..	1	1	51
Dietary Deficiency	1	2	8	2	3	43
Poor Dentistry	2	3	..	3	..	28
Systemic	3	..	4	..	..	27
Tooth Loss	..	3	1	3	..	21
Infection	3	1	..	1	..	21
Malocclusion (and malposition)	..	2	2	1	..	16
Heredity	2	..	..	1	..	12
Mechanical Irritatants	1	1	..	..	1	10
Improper Toothbrushing	1	1	..	..	1	10
Fungus and Fungus-Like Organisms	2	..	..	..	..	10
Food Impaction (and Poor Contacts)	..	1	..	2	..	8
Endocrine	..	..	1	..	4	7
Habits	..	..	2	..	1	7
Emotional	..	1	..	1	..	6
Environment	1	..	..	..	1	6
Poor Tissue Tone	..	..	1	..	1	4
Age	..	1	..	..	..	4
Debilitating and Degenerating Diseases	..	..	..	..	..	..
Insufficient Masticatory Function	..	..	1	..	..	..
Lack of Function	..	..	..	1	1	3
Lack of Keratinization	..	..	..	1	..	2
Improper Toothbrushing	..	..	..	1	..	2
Oral Sepsis	..	..	..	..	1	1
Abnormal Anatomy	..	..	..	..	1	1
	..	..	..	..	..	..

and carried out by, anyone who can learn other technical phases of dentistry. In the dental school, such procedures should be taught as fundamental before any restorative operations are undertaken. At New York University College of Dentistry, the Periodontia Department has until very recently been a bottle-neck in the handling of patients by the operative and prosthetic clinics. Instead of bi-passing the restoration of the periodontal tissues to health and the teeth to proper function, the Periodontia instructional staff was increased and additional chairs were borrowed from other departments in order to meet the exigency. Thus, we have

(Fig. 2)

Is balancing of occlusion taught at your school? (32 schools)

Yes: 28	No: 1
Demonstrated only:	5
Students only:	2
Both:	24

Do you believe that traumatic occlusion plays an important etiologic factor in periodontal disease?

Yes: 26	No: 1
Contributing:	5

(Fig. 3)

ETIOLOGY OF PERIODONTAL DISEASE*

S. C. MILLER

Dysfunctional

1. *Overfunction*
   - a. Excessive stress on teeth
   - b. Insufficient periodontal support
   - c. Too powerful masticatory musculature
2. *Underfunction*
   - a. Premature wear (natural or artificially produced)
   - b. Nonocclusion
   - c. Indolent mastication
3. *Abnormal habits*
   - a. Unilateral mastication
   - b. Abnormal biting habits
   - c. Clenching
   - d. Bruxism and bruxomania

Irritational

1. *Abnormal anatomy*
   - a. Tooth form
   - b. Tooth position
2. *Deposits on the teeth*
3. *Nondetergent diet*
4. *Food impaction*
   - a. Vertical
   - b. Horizontal
5. *Mechanical irritants*
   Cavity margins, improper inlay or filling margins; orthodontic appliances, bridges, clasps or dentures which impinge upon or irritate the gingivae
6. *Chemical irritants*
7. *Atmospheric irritants* (mouthbreathing)
8. *Improper toothbrushing*
9. *Improper orthodontic procedure*

Systemic

1. *Faulty nutrition*
   - a. Acid-base disbalance
   - b. Vitamin deficiency
   - c. Mineral deficiency
2. *Debilitating diseases*
3. *Blood dyscrasias*
4. *Endocrine dysfunction*
5. *Pregnancy*
6. *Allergies* and *drug idiosyncrasies*
7. *Metallic poisonings*
8. *Psychosomatic factors*

* From S. C. Miller: Textbook of Periodontia (ed. 2), Philadelphia, The Blakiston Co., 1943.

been operating on an average of twenty-one chairs full time solely for Periodontic treatment for the past school year. This summer a completely new Periodontia Clinic is being built to provide twenty-six chairs in full time operation. The enlargement and development of the Periodontia Department must take place in all schools in order to adequately meet the need of fundamental preparation of all dental cases.

A revelation was made by us to the elimination of the block system as carried out this year by Dean Walter H. Wright. Although we had felt that the maximum number of cases were being handled by the Periodontia Department under the block system, we were interested to learn through individual case assignments:

(1) The number of sessions required to complete each operation was markedly reduced so that many more cases could be handled.

(2) The students' interest in more complex cases which had greater credit value caused him to handle more patients with equilibration of occlusion as a major step in treatment.

TEACHING OF OCCLUSION IN OTHER DEPARTMENTS

In the basic sciences of dental anatomy, histopathology and oral pathology, the importance of traumatic occlusion as a factor in periodontal disease is referred to frequently and correlated with clinical findings.

DEPARTMENT OF COMPARATIVE ANATOMY, DENTAL MORPHOLOGY AND OCCLUSION

For the department of Comparative Anatomy, Dental Morphology and Occlusion, the following outline of subjects was supplied by Prof. Finn J. Bronner as being taught in the pre-clinical period:

(1) Inorganic evolution; historical geology.

(2) Brief outline of Evolution on the evidence from Comparative Anatomy and Embryology.

(3) Various tooth attachments and functions of teeth.

(4) Position, number and succession of teeth.

(5) Evolution of tooth form and occlusion.

(6) Typical dentitions, jaws and jaw suspensions, temporomandibular joints and jaw movements correlated with various dietary habits.

(7) Comparative study of Primate dentitions including Pre-historic Man.

(8) Cranial, gnathic, facial and palatine indices.

(9) Brief consideration of comparative composition and distribution of the structures of teeth.

(10) Gnatho-dynamics and intensive study of human occlusion.

(11) Practical consideration and the application of comparative dental anatomy to problems in dentistry.

(12) Concurrently, 28 teeth are reproduced by the students (two of a kind since our controlled experiments show vast improvement in the understanding and carving of the second reproduction over only one). These teeth are later placed by the student in a plaster replica of the jaws in their proper anatomical and functional relationship. Also, certain contiguous structures together with the blood and nerve supply are being reproduced in class by the student according to mimeographed instructions and under classroom supervision.

The Operative Dentistry Department, Prosthetic Dentistry Department, Crown and Bridge Department and Department

of Orthodontics all devote much attention to occlusion.

DEPARTMENT OF ORTHODONTICS

Samuel Hemley, Professor and Chairman of the Department of Orthodontics, states:

> Occlusion is the basis of all dentistry. Every phase of dental practice has for its objective either the maintenance of normal occlusion or the restoration to normal occlusion when any deviation from the normal exists. The correction of abnormal occlusion plainly implies a restoration to *normal*. But obviously, one must first know what is normal before any abnormal condition can be recognized as such.
>
> A long disturbing factor in the practice of orthodontics has been the occurrence of failures for which no rational or controllable reason could be offered. The same is true for some successes. For this reason the subject of occlusion is presented from the point of view that the study of orthodontics is primarily biological.
>
> The confusion arising from the different concepts of normal occlusion has emphasized the necessity for a study of the fundamental biological factors which influence its development. The department therefore attempts to clarify these basic fundamentals and to show their influences in the field of orthodontics. The biochemical and physical factors involved in bone growth are stressed. These features are analyzed in their relation to the study of occlusion.
>
> In presenting the subject of occlusion, an earnest effort is made to define principles based on facts rather than authority. Sometimes the student may find the teacher in apparent disagreement with some accepted belief. Where such is the case, carefully selected evidence is presented justifying the position taken and, of course, the opposing point of view is also given together with its supporting arguments.

DEPARTMENT OF OPERATIVE DENTISTRY

A. H. Morrison, Associate Professor and Chairman of the Operative Dentistry Department, reports:

> All factors of good, sound dentistry must be incorporated in the completion of a perfect fitting restoration and one of the most important of these factors is occlusion.
>
> The study of occlusion in operative dentistry is necessarily applied during the insertion of any type of individual restoration or restorations, whether an opposing tooth is present or not. The proper carving and contour given to a filling, resulting in correct contact with the approximating and occluding teeth will prevent any food impaction area or traumatic occlusion from occurring which would give rise to a localized periodontal condition. Proper height to any filling is carefully determined, even where there is no occluding tooth, in order to prevent unnecessary future grinding and possible destruction of the restoration.

DEPARTMENT OF CROWN AND BRIDGE PROSTHESIS

David H. Coelho, Associate Professor and Acting Chairman, presents the following:

> Fundamental to the construction of fixed bridges is the correct occlusal relationship. Prior to beginning any operative procedures the teeth should be balanced to obtain the best occlusion possible under the conditions presenting in each case.
>
> A fixed bridge, being a mechanical appliance and subject to the laws of stress and strain, should be made with slight deviations from the accepted version of occlusal relationship for the natural dentition. Cusp heights and cusp inclines should be reduced and consequently the occlusal surfaces will approach a twenty-degree angulation.

(Fig. 4)

DEPARTMENT RESPONSIBLE for the TEACHING of PERIODONTIA

(32 SCHOOLS)

Department Responsible	*1941*	*1947*
Separate Department	15	13
Operative	13	5
Oral Pathology	3	1
Oral Medicine	2	5
Department Medicine	1	1
Dental Medicine	1	0
Dental Pathology and Therapy	1	0
Dental Pathology	0	1
Oral Surgery	1	1
Pathology, Therapeutics and Periodontia	0	1
Combined with Endodontia	0	2
Division in Department of Dentistry	0	1
Not stated	0	1

The occlusal anatomy, however, follows the normal with some accentuation of the accessory grooves found in the natural teeth. This may be called a modified anatomical pattern.

Since most fixed bridges are made in mouths showing some degree of wear, this reduction in occlusal anatomy is normal to the rest of the dentition. However, in young mouths where no attrition is evident as yet, it is advised to follow the pattern of occlusion presented by the remaining teeth.

The larger the span to be bridged, the narrower should be the bucco-lingual width of the restoration. This variation from normal occlusion becomes necessary in order to conserve the abutment teeth. Care is advised to be taken to see that there is a balanced relation in centric and in lateral position on the working side.

Briefly, occlusion in fixed bridge construction should be considered in a somewhat different light than that in the natural dentition and should be altered to accept the additional loads with the least amount of injury to the supporting tissues.

DEPARTMENT OF FULL AND PARTIAL DENTAL PROSTHESIS

Dean Walter H. Wright is Professor and Chairman of this department. Associate Professor George Buckley presents the following summary:

Students in this department are trained in the fundamentals of balanced

(Fig. 5)

TEXTBOOKS EMPLOYED in the TEACHING of PERIODONTIA

Textbook Employed	*1941 37 Schools*	*1947 32 Schools*
None	13	4
Miller, "Periodontia"	8	14
Goldman	0	6
Merritt	4	5
Stillman McCall	3	1
Coolidge	3	4
Black	2	2
Bunting Hill	1	1
Fones	1	0
James	1	0
Kronfeld	1	1
Box	1	3
Prinz	1	0
Orban	0	2
Gottlieb	0	1
Leonard (reprints)	0	1
Mead (Diseases of Mouth)	0	1
Thoma (Oral Diagnosis and Treatment Planning)	0	1
Hill (Oral Pathology)	0	1
Ward (Operative Dentistry)	0	1

occlusion. Methods of obtaining jaw relationships on clinical patients are taught as a vital part of the procedure. In order to minimize the trauma to the ridges and improve the stability of the dentures, close attention is paid to the details of centric position, lateral and protrusive excursions in accordance with the five laws of articulation as stated by Hanau.

The student is trained to equilibrate the occlusion by reducing the cusp inclinations to conform, in the various excursions of the mandible, to the condylar inclination of the patient. The procedure consists of selective and systematic grinding of the cuspal inclines to eliminate any occlusal disharmony in centric position, lateral and protrusive excursions. Final smoothing is accomplished through the use of carborundum paste. In this manner, the desired factors of tooth form and occlusion are retained.

PERIODONTIA DEPARTMENT

In the Junior year the Periodontia Department has instituted an indoctrination course to give the students preliminary training before actually entering the clinic. During this one week course, Equilibration of Occlusion is taught first by demonstration and motion pictures. Each student then equilibrates a set of plaster casts on a Hanau articulator following all the rules of procedure as outlined in the chapter on this subject in Miller's Textbook of Periodontia. In the clinic, each Junior student equilibrates the occlusion of at least four cases, while the Seniors perform this procedure on at least eight cases.

COOPERATION WITH OTHER DEPARTMENTS

A close and friendly relation is maintained with the Operative Dentistry, Crown and Bridge and Prosthetic Departments so that restorative work is never done before equilibration of the occlusion. The restorations are designed to fall into the pattern set up by the occlusion as it has been prepared in the Periodontia Department.

It has also been found helpful to equilibrate the occlusion after orthodontic procedures to protect the alveolar bone after teeth are brought into new function and to shorten the period of retention. Shaping of the teeth is invaluable as a preliminary preparation to mandibular resection.

Thus, with the development of the teaching of dentistry, it is found that equilibration of occlusion is fundamental to all other phases of a complete dental service. The cooperation of all departments, pre-clinical as well as clinical, is essential in carrying out such a program.

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SEE YOU AT THE DECEMBER 7th LUNCHEON MEETING—(See p. 108)

First Annual Meeting.
American Academy of Dental Medicine.
Hotel George Washington, June 15-1947.

DENTAL AND MEDICAL PHOTOGRAPHY

(*Continued from* April *issue*)

WILLIAM M. GREENHUT, B.S., D.D.S., *New York, N. Y.*

APPARATUS

The apparatus designed to hold the camera for "closeup" photography is simply a metal base on which is set two sockets for the 500 W. motion picture bulbs. Over these bulbs is placed two round metal shields in which two openings are cut at the level of the filaments. Behind these bulbs and in the center, is set a platform to which the camera is attached by the tripod attachment. At each end of the platform there is a handle for holding the entire apparatus. To the left handle there is attached a momentary throw switch (10 A.—125 W.). To the under-side of the platform provisions may be made for a tripod attachment (Fig. 1), (Fig. 2).

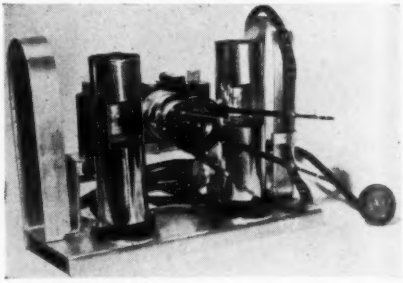

Fig. 1. Complete apparatus with Leica Camera and auxiliary "closeup" device.

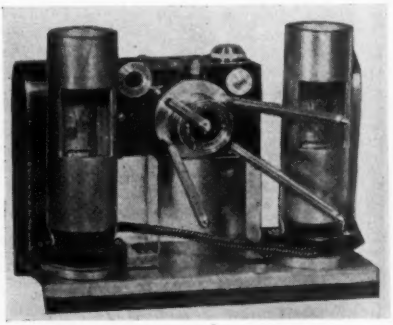

Fig. 2. Complete apparatus with Argus Camera and copying attachment.

"CLOSEUP" ATTACHMENTS

The photography of "closeup" pictures is entirely dependent upon an auxiliary device for use with the Elmar 50 mm lens or the Summar 50 mm lens. It consists of three intermediate collars differing in length, which are screwed between lens and camera body, and with which the scales 1:1.5; 1:2; and 1:3 are obtained, and also of a clamping ring with four detachable telescopic legs in which can be placed extensible steel rods. The exact focus is obtained by withdrawing or pushing in these rods to the marks provided, while the area which can be photographed is indicated by the four points of these rods (Fig. 3.)

The clamping ring of this arrangement has, for each of the three scales of reproduction;—1:1.5; 1:2; 1:3;—four different bushes into which the legs are screwed. The angle at which these bushes are placed in the ring gives the proper spread for the legs, which has to conform with the angle of image of the various lenses.

The extensible steel rods are marked with yellow and white rings, which indicate how far they have to be withdrawn

Fig. 3. Photograhic set-up in operation with Argus Camera. The left thumb is on light switch, and the right index finger is on camera release.

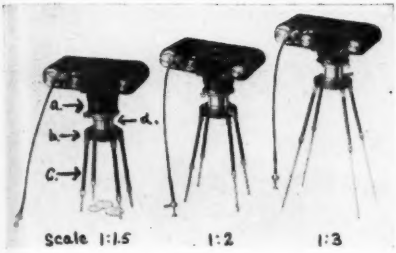

Fig. 4. Auxilliary device with standard F 3.5 "Elmar" lens (50mm) showing spread of steel rods and area. (See text for size of object). a. Intermediate collar, b. Clamping ring, c. Steel telescopic rods, d. Elmar lens (50mm). (Leica Manual)

for various scales of reproduction when using the Summar (yellow) and the Elmar (white) lens.

Size of Object

Greatest dimensions at scale 1:1.5 about 36 x 54mm (1½ x 2¼")
Greatest dimensions at scale 1:2 about 48 x 72mm (1⅞ x 3¼")
Greatest dimensions at scale 1:3 about 72 x 108mm (2⅞ x 4¼")
Note: The author found the scale 1:2 most appropriate for intra-oral photography.

Depth of Focus: (lens set at infinity)

	1:1.5	1:2	1:3
f9	.....2.25mm	3.6mm	7.2mm
f12.5	....3.12mm	5.0mm	10.0mm

Head Rest

It is advisable to use the head rest of the dental or x-ray chair to support the patient's head and keep it in the desired position.

Retraction

The Columbia lip retractor is used to retract the lips. It is suggested that several pairs be obtained. It has two ends which are different in size. The smaller end is two inches wide; and the larger size at the opposite end is 2½ inches wide.

Mirrors are necessary to obtain some pictures in the oral cavity. Various sizes of dental mirrors (not magnifying) are

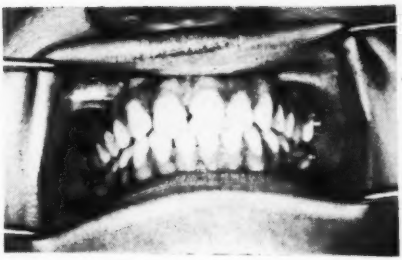

Fig. 5.a. Photograph of a periodontal case indicating the size available with intermediate collar 1:3. (Distance from lens to subject is approximately 7¾ inches with Elmar 50mm lens).

Fig. 5.b. Same as Fig. 5.a. but with intermediate collar 1:2. (Distance from lens to subject is approximately 5½ inches with Elmar 50mm lens).

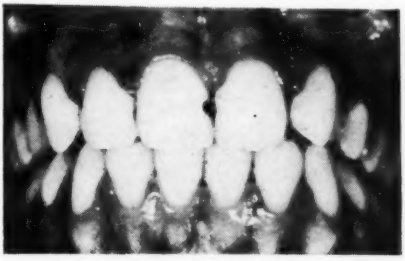

Fig. 5.c. Same as Fig. 5.a. but with intermediate collar 1:1.5. (Distance from lens to subject is approximately 4½ inches with the Elmar 50mm lens).

obtainable and also the mirror that is available in a lady's handbag has been found useful. Mirrors are necessary when photographing the linguals of anterior teeth. When a mirror is used, the temperature of same must be equal to the temperature of the patient's mouth; or condensation will form on the mirror, and make it impossible to obtain a clear reflection. This can be avoided by heating the mirror in the flame, and then immediately testing it on the back of the hand. If the hand can tolerate the warm mirror, it is a good indication that the mirror is not too hot for the patient's mouth.

Film and Slides

The type of film to be used is a matter of choice. Kodachrome 135A is preferred and is used without a filter. For black and white films, any of the 35mm film available is satisfactory. (The exposure for Kodachrome must be determined by several test shots at various exposure times, such as 1/20, 1/30, and 1/40, leaving the opening constant at about f. 11). The colored slides or transparencies may either be viewed thru a suitable handviewer, or a projection machine. In order that the black and white film may be projected, it is necessary that they be transposed into slides. They may also be enlarged and printed to any size from the negatives.

Suggestions:

1. The top of the rods should touch the retractors or the face. The depth of focus with the 50mm Elmar lens will be suffi-

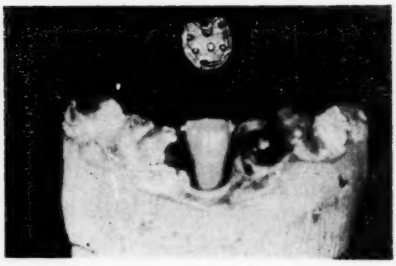

Fig. 6.a. Photograph of a difficult bridge on a model. (Dr. P. N. Harris)

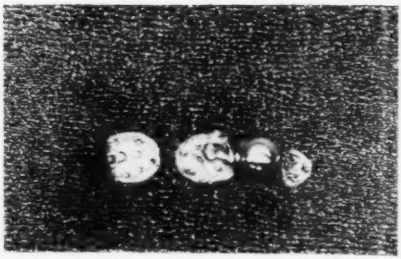

Fig. 6.b. Same bridge as Fig. 6.a. showing fine detail that is possible with photographic set-up.

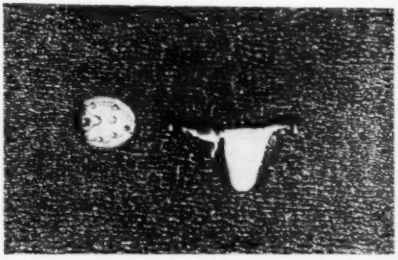

Fig. 6.c. Same as Fig. 6.a. Another view of bridge.

Fig. 7. Illustration of Third Molar Area. (This photograph indicates the ability of the apparatus to cover the posterior part of the mouth. The taking of this picture is no more than a few seconds, from sighting to pressing shutter release). f 11 at 1/30.

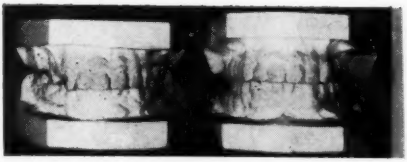

Fig. 8. Illustration of before and after models for the orthodontist.

Fig. 9. Photograph illustrating epuloidal type of growth.

Fig. 10. Same as Fig. 9. but after curettage and removal of epuloidal type of growth.

cient to include the anteriors and the last molars.

2. Hold the bottom of the apparatus parallel to the occlusal plane of the mandible. Try not to shoot up or down into the oral cavity unless you have a reason, such as posterior areas with the mouth open, etc.

3. Hold the elbows steady against the side to prevent moving the apparatus.

4. Make certain that there is an even illumination of the subject and no shadows. If there are shadows, a slight movement of the set-up will eliminate them.

5. Anything about two or three inches beyond the tips of the rods, and properly illuminated will be taken with this set-up.

6. Frequently, it may be necessary to take one, two, or three rods off the ring in order to get closer to the object to be photographed; e.g. the third molar areas, tonsils, or uvula. If one will approximate the position of the object with one of the rods of the ring, and the area is illuminated by retraction of one or both cheeks, one will obtain the proper photograph. Any point that is within sight of the rod, and properly illuminated will be photographed (See Fig. 2. for third molar area).

7. It is recommended that the patient be allowed to assist as much as possible since it has been proven that with the patient's cooperation, better exposures are obtained; e.g. holding the cheek retractor.

8. When using the K 135A film, try not to have too much extraneous light from other sources, such as sun light, overhead lights or mouth lights. These additional light sources may change the color or interfere with exposure time.

9. The set-up that has been described is basic and one may wish to experiment with a telescopic lens, proxar lens, or sliding attachments. If a tripod is necessary, there is a tripod attachment on the underside of the base which will permit the use of such equipment. The bracket table of the dental unit may be used as a tripod if desired.

10. A slight adjustment of the platform that holds the camera will permit the taking of third dimensional photographs.

11. The author will be glad to answer any technical problems concerning "close-up" photography.

124 East 84th Street

* ALL THE INTRAORAL PHOTOGRAPHS ARE COPIES OF 35 MM. KODACHROME SLIDES OR TRANSPARENCIES.

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MODERN CONCEPTS IN ENDODONTIA

SAMUEL TURKENKOPF, D.D.S., *Newark, N. J.*

This brief consideration of the function and treatment of the pulpless tooth makes no pretense at adding new material to what has already been written on the subject. In every profession, a restatement and review of knowledge gained from valid experimentation and successful experience can sometimes prove as stimulating and as valuable to the general practitioner as accounts of new discoveries.

This paper aims only to present such a review by outlining briefly the philosophies and techniques developed by several of the men who have done outstanding work in the field of focal infection as related to the teeth and the surrounding bony structures, and evolving certain natural conclusions from them.

In modern progressive dentistry, the pulpless tooth is no longer unequivocally regarded as an infectious detriment to the health of the patient and as such extracted with dispatch and without further consideration. It is recognized that through pulpless, it is still a living organism, which, if properly treated, can in many cases function as no artificial replacement can. If we are to evaluate such a tooth as a menace or an asset to health, we must understand the mechanism by which the osseous environment of the tooth copes with infection.

In the first place, we must recognize the fact that bone is a primitive tissue and will repair itself under the most adverse conditions, with possible exceptions in the case of diabetes, nephritis, tuberculosis and syphilis.

In the second place, it has been shown by E. W. Fish,[1] of England, that infection, i.e. microorganisms, cannot exist for any length of time in living bone tissue. For this reason the radioluscent area at the apex of a pulpless tooth, as in a chronic abscess, is not an infected area, but is a result of irritation caused by toxins liberated by infection in the root canal. This latter was demonstrated by Graham[2] who prepared a bacterial filtrate from microorganisms found in periodontal pockets and showed it to be highly toxic and destructive to tissue. Fish[1] showed three zones of reaction around the infected zone, which is the only place where microorganisms are found. These three zones he called (1) zone of contamination, (2) zone of irritation, and (3) zone of stimulation.

1—*Zone of Contamination*

Here is found round cell infiltration and cellular destruction caused by the toxins discharged from the bacteria in the infected zone. Bone lacunae appear empty.

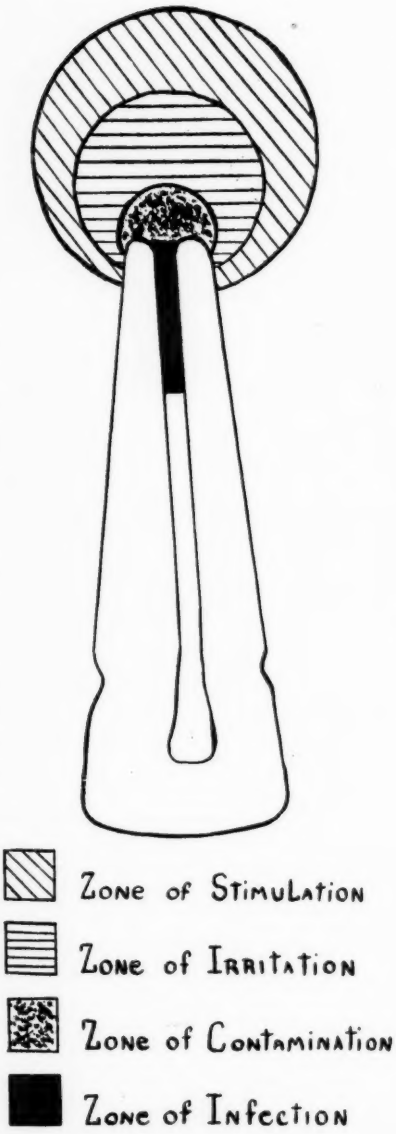
2—*Zone of Irritation*

Farther out from the zone of infection we find histiocytes and osteoclasts, activity of which result in "opening up a gap in the bone all around the center of the lesion, as trees are felled to isolate a forest fire. The space thus obtained becomes filled with polymorphonuclear leukocytes, and until that has taken place, the danger of wide spread necrosis remains." (1)

3—*Zone of Stimulation*

This marks the periphery of the area, and here the toxins are mild enough to be a stimulant in response to which new bone is formed. This new bone tissue acts as a wall of defense around the zone of irritation.

From these studies, we may logically conclude that the periapical area is not an infected area, but is indicative of local tissue destruction caused by the toxins liberated from the infection in the root canal. Thus, repair will take place if the root canal, as the source of the toxins, is removed by proper cleasing, sterilizing, and filling. The tooth will then again assume its role as a useful and healthy organ.



Outline of Treatment

A. Acute alveolar abscess.

If possible, at the first visit, establish drainage through the root canal and/or by incising the fluctuating area. Follow with intraosseous injection of one c.c,. 50,000 units of penicillin in the region of the tooth apex. Root canal irrigation with one c.c. of penicillin of the same strength should be a part of the first treatment. Seal the penicillin in the canal until the next visit.

This treatment has controlled every one of twenty-four cases of acute abscess treated in the author's private practice, and at the Beth Israel Hospital Dental Clinic, Newark, N. J. In treating acute symptoms, penicillin certainly seems to be the miracle drug, the patient invariably being made comfortable in from one to three hours. These cases treated are not enough in number to warrant any definite conclusions, but certainly show that for the first time in the history of root canal therapy, acute symptoms may be controlled almost at once, and that a canal may be protected from further contamination by sealing in penicillin at the first visit. Reports by Pear[3] and Bender[4] show consistently encouraging results.

B. Chronic Infections.

1. Thorough mechanical cleansing and enlarging is the *sine qua non* of root canal therapy, and must be accomplished without irritation to the periapical tissues.

2. Followed by irrigation with either:

a. Double strength chlorinated soda solution and hydrogen peroxide used alternately, or

b. Penicillin. Inject through the apical foramen, the solution running back out of the canal acting as an irrigating agent.

3. The next step is to attain sterility of the canal and accessible apical tissues. This may be accomplished by use of:

a. The antibiotics

1. Penicillin. 20,000 units per c.c. injected into the canal and the periapical tissues, and sealed in the canal for three or four days and reapated if necessary.

2. Streptomycin. One half gram c.c. applied in the same manner. This drug is particularly effective against gram negative microoganisms. Streptomycin is used if positive cultures persist with the use of penicillin.

3. Penicillin points as suggested by Grossman[5].

b. The following drugs used in rotation every three or four days until sterile cultures are obtained, or in conjunction with the antibiotics.

1. Beechwood creosote.

2. Camphorated mono-chlorphenol.

3. Azochloramid.

4. Cresatin.

c. Electrolytic medication. Through the years this method has proven to be one of the most reliable for root canal sterilization. Electrolytes used are:

1. Lugol's solution.

2. Churchill's tincture of iodine.

3. Solution found to be most effective by Grossmann and Appleton[5]; Zinc iodide 15.0 grams, Iodine crystals 0.6 grams, Distilled water 500 c.c.

Keep in amber alkali free bottle.

d. Surgery.

In cases where we cannot obtain negative cultures following conservative methods as outlined above, a necrotic nidus may exist either on the root surface external to the canal or in the periapical space.

In these cases we may resort to:

1. Root resection.

2. Apical curattage. Weaver[6] of Cleveland, and Barron[7] of Dallas, believe that better results are obtained by simply removing the infected tissue with curettes from the periapical space and from the root surface, the contention being that the cementum of the root presents a better environment for deposition of new cementum than does dentine.

4. When the canal has been rendered sterile, it may then be filled or obliterated by any method which will successfully seal it hermetically.

a. Gutta percha points or silver points with root canal cement.

b. Gutta percha points with chloropercha or eucapercha.

c. Zinc oxide and beechwood creosote made into a stiff paste (Barron[7]), followed by apical curettage.

In conclusion, a word should be said about the necessity for the taking of cultures in root canal therapy. If we are to function as a scientific profession, we must work along scientific lines, and empiric methods must not be tolerated. If we are to seal a root canal, we must, in justice to our patient and to our own conscience convince ourselves by all available means that the canal is sterile. To test this sterility, the only reliable means available is the bacteriological examination.

195 Montclair Ave.

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William James once philosophized, "There are three stages in the history of every medical discovery. When it is first announced, people say it is not true. Then, a little later, when its truth can no longer be denied, they say it is not important. After that, if its importance becomes sufficiently obvious, they say, 'Anyhow, it is not new.' "

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SEE YOU AT THE DECEMBER 7th LUNCHEON MEETING—(See p. 108)

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TEXTBOOK OF MEDICINE

RUSSELL L. CECIL, A.B., M.D., Sc.D.
W. B. Saunders Company, 1947

The revision of this textbook of medicine has been a tremendous enterprise not only in bringing the material up-to-date but in integrating this vast body of knowledge so that the book is harmonious in its make-up. Each chapter is contributed by a specialist in the field thus enabling recent advances to be adequately embodied without inclusion of controversial ideas or practices. The arrangement has remained the same—each group of diseases being presented in sequence of each system of the body. But each system is preceded by an orientation chapter giving the scope of the content and the nature of the local and systemic disorders involved. The medicine portrayed is from the standpoint of the individual at the bedside rather than from the viewpoint of the disease *per se*. It is functional medicine on the two dimensional page, hence of value to the student and to the clinician irrespective of their specialty. The book is admirably suited to the dentist whose training is not only in the careful visualization and evaluation of each part of the oral cavity but also in the interpretation of the functional and structural deviations in their relation to systemic disease. Without such a correlation, the local therapy formulated is of little avail even though the diagnosis be accurate. With such cues from local structures it becomes a simple matter to trace the relationship of local symptoms and clinical entities throughout the book. This procedure not only affords review of systemic medicine in terms of local manifestations but also a practical guide to the mechanism and management of physical, mental and psychosomatic disease.

I. Newton Kugelmass

PRACTICAL FULL DENTURE PROSTHESIS

JOSEPH SIMEON LANDA, D.D.S.,
Dental Items of Interest Publishing Co., Inc., Brooklyn 7, N. Y.,
pp. 356, 160 illustrations, price $8.50.

This book is so written that both the student and practicing dentist may derive a great deal of benefit in its reading. It is a story so organized and executed that it leaves nothing to the imagination.

Full denture work presents many difficulties. The author has presented these and demonstrated how they may be overcome so that the denture patient may be a happy one.

Of great interest to all practitioners will be the excellent theoretical chapters preceding the actual text on denture construction. These chapters include anatomy of the mouth, diagnosis and prognosis, the theory of full denture retention and the preparation of the mouth for the restorations.

In dealing with the practical aspects, the author explains the advantages and disadvantages of the various technics. Complete and detailed instructions are given for the complete operation of full denture construction, starting at the beginning and explaining each step in sequence and in detail.

Of particular interest are the chapters on esthetics, phonetics, immediate dentures, burning mouth, gagging and trouble shooting. These chapters deal with the everyday experiences of dentists and patients as related to denture wearing. Many important hints are to be found in these pages. It is one of the best books we have reviewed and it is recommended to all who study and practice dentistry.

L. R. B.

ALLAN N. ARVINS, *Editor*
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JUNE 15TH, 1947.

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ANNUAL LUNCHEON

Report on Luncheon held as part of the program of the 1st Annual Meeting of the American Academy of Dental Medicine at the George Washington Hotel in New York City. There were approximately 100 present at the Luncheon.

The luncheon gathering was called to order by our president, Dr. Miller, who called on Dr. Sorrin to lead those present in singing the National Anthem.

Dr. Miller then made some remarks about the members present, noting that visitors and members had come from points as far distant as South America (Colombia, Argentina, Chile) and South Africa (Capetown) and Johannesburg, as well as Czecho-Slovakia, Canada and a number of distant states in our own country (California, Mississippi, North Carolina and Virginia). Dr. Miller also pointed out representatives from various dental schools namely: Tufts, University of Pennsylvania and Temple.

Our presiding officer then asked for greetings from Dr. J. O. McCall who was introduced as one of the founders of the American Academy of Periodontology. Dr. McCall spoke of the organization and development of the American Academy of Periodontology and mentioned the relationship which may be brought out by that Academy and the American Academy of Dental Medicine. Dr. McCall felt that the two organizations would probably in their own way be cooperative and contribute to each other for the benefit of both groups, the professions and the sciences involved.

Dr. Miller then introduced Dr. Walter Henry Wright, Dean, New York University, College of Dentistry. Dean Wright has that many degrees and distinctions that your reporter found it difficult to get them all down. Some however were: D.D.S, B.S., M.S., Ph.D., F.A.C.D.; certain honorary distinctions such as Omicron Kappa Upsilon, Omicron Delta Kappa, and Delta Sigma Delta. Dr. Wright is the author of many articles on various subjects of research and teaching methods. Dr. Miller also mentioned Dr. Wright's extra-curricular activities to demonstrate that he was not only a scientist but also of good fellowship. A handsomely engraved certificate was then awarded Dr. Wright and was quoted from as follows: "American Academy of Dental Medicine. Dr. Walter Henry Wright, being qualified and interested in advancing the aims of dental medicine and in recognition of his standing as a scientist, is hereby elected to honorary membership in the Academy. June 15, 1947."

Dr. Wright in his acceptance spoke of the interest that he holds for dental medicine, the importance of the field, and the importance of the correlation between dental and systemic conditions. Dr. Wright made a plea for better understanding between the two professions. He stressed the advantages of cooperation and described Dentistry as a specialty of Medicine and urged the members of The American Academy of Dental Medicine to serve as liaison between the two professions.

Dr. Miller closed the Luncheon Meeting, reminding those present to attend the afternoon scientific sessions.

BERNARD SATUREN

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Greater New York Dental Meeting

The American Academy of Dental Medicine will hold a luncheon meeting prior to the Greater New York Dental Meeting at the Hotel Pennsylvania, on December 7th, 1947 at 12:30 P. M. Round table discussion will follow—All members and interested dentists are invited to attend. Address all communications to Dr. William Greenhut, Secretary, 124 East 84th Street, New York City.

The Twenty-third Annual Greater New York Dental Meeting, sponsored by the First and Second District Dental Societies, will be held at the Hotels Pennsylvania and New Yorker, December 8 through 12.

Exhibits, General Sessions, Morning Topic Discussions, Visual Education Program, Table Clinics, Jamboree and Alumni Luncheon will be held at the Hotel Pennsylvania. Morning and Afternoon Registered Clinics and Evening Topic Discussions will be presented at the New Yorker.

Rooms for the housing of visitors to this meeting have been allocated in the following hotels: Bristol, Century, Claridge, Columbia, Governor Clinton, Martinique, McAlpin, New Yorker, Park Central, Pennsylvania, Piccadilly, Times Square, Victoria, Wellington and Wentworth.

All requests for reservations must be addressed to the New York Convention and Visitors Bureau, 233 Broadway, New York, N. Y., where every effort will be made to locate applicants in hotels within the immediate vicinity of the meeting. Kindly indicate several choices. Your reservation will be confirmed directly from the Hotel.

The program of the Meeting, with full details, will be sent you upon request early in November. Send for your clinical reservations as soon as you receive the program to insure securing the choices you want. BRING YOUR ADA CARD WITH YOU TO THE REGISTRATION DESK TO AVOID CONFUSION.

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The American Academy of Dental Medicine will hold a luncheon meeting prior to the Greater New York Dental Meeting at the Hotel Pennsylvania, on December 7th, 1947 at 12:30 P. M. Round table discussion will follow — All members and interested dentists are invited to attend. Address all communications to Dr. William Greenhut, Secretary, 124 East 84th Street, New York City.

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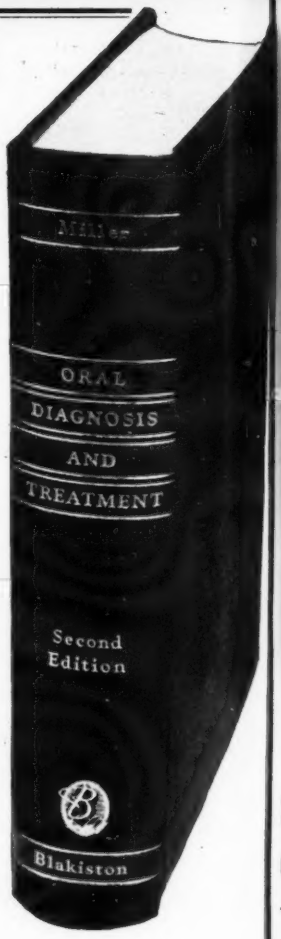

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